

# OX RIDGE ELEMENTARY SCHOOL REPLACEMENT

## Traffic Impact Analysis Summary

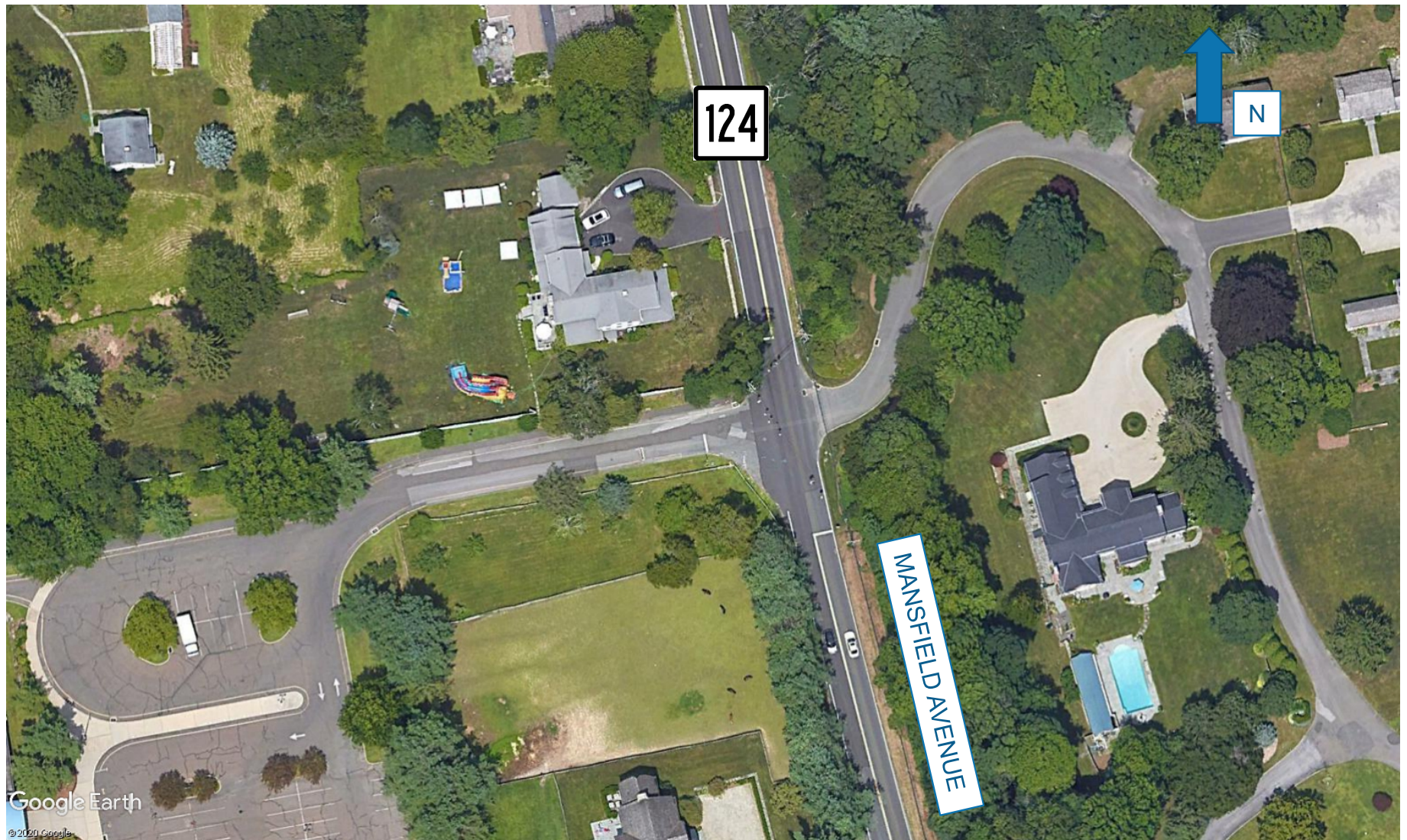
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# TRAFFIC & PARKING OVERVIEW

- **Roadway Access & Operations – Craig Yannes (T&B)**
- **Internal Circulation & Parking – Jessica Petro (SLAM) and Principal Luke Forshaw**
- **Proposed Improvements**
  - Revised Traffic Signal Timing
  - Longer Bus and Parent Drop-off & Pick-Up Areas
  - Better Separation of Bus & Parent Drop-Off & Pick-Up Areas
  - Significant Increase in Parking
- **Conclusion: Improvement to traffic flow accessing and circulating the site**
  - Confirmed by reviews and approvals from Town Traffic Consultant (FP Clark) and CTDOT



# AERIAL MAP



# EXISTING OPERATIONS - OBSERVATIONS

- **Observations during peak periods (Nov. 2019) and review of traffic counting videos (May and Oct. 2019)**
- **AM Arrival Peak Period**
  - Heavy SB traffic – queued vehicles extended to Half Mile Road
  - NB Queues of up to 10 vehicles
  - Queues of up to 3-4 vehicles exiting school driveway
- **PM Dismissal Peak Period**
  - Traffic volume on Mansfield Avenue was moderate
  - No significant queues entering or exiting the driveway
- **Queues from school bus and parent pick-up/drop-off operations were contained within the site and did not impact operation of the signalized intersection**
- **The parents and bus traffic arrival and dismissal periods peaked around 8:45 AM and 3:35 PM, respectively. The delays lasted approximately 15-20 minutes before dissipating.**



# PROJECT SIZE SUMMARY

	Building	Parking	K-5 Enrollment	ELP Enrollment	Total Enrollment	Employment
Existing	58,344 SF	93	393	24	417	K-5: 89 (73 FT; 16 PT) ELP: 6 (6 FT)
Proposed	109,985 SF [+51,641 SF]	140 [+47]	428 [+35]	150 [+126]	578 [+161]	K-5: 89 (73 FT; 16 PT) [No Change] ELP: 41 (31 FT; 10 PT) [+35 (+25 FT; +10 PT)]

## • School Hours

- K-5: 9 AM to 3:30 PM, Mon.-Fri.
- ELP: 9:30 AM to 1:30 PM, Mon.-Thurs.

## TRIP GENERATION METHODOLOGY

- **Analyzed overlapping K-5 and Mansfield Ave traffic peaks**
  - AM School Arrival from 8:00 to 9:00 AM
  - PM School Dismissal from 3:00 to 4:00 PM
- **ELP arrival and dismissal do not overlap with Mansfield Ave peak traffic flows**
- **Traffic increase based upon:**
  - Existing, observed traffic counts at the driveway during peak periods
  - K-5 student population increase (428 projected max versus 393 existing)

# TRIP GENERATION

**TABLE 4**

Site Generated Traffic Summary

<b>Existing - 393 Student School</b>			
<b>Peak Hour Period</b>	<b>Enter</b>	<b>Exit</b>	<b>Total</b>
Weekday Morning School Arrival	176	114	290
Weekday Afternoon School Dismissal	91	152	243
<b>Proposed - 428 Student School</b>			
<b>Peak Hour Period</b>	<b>Enter</b>	<b>Exit</b>	<b>Total</b>
Weekday Morning School Arrival	192	124	316
Weekday Afternoon School Dismissal	99	166	265
<b>Net Vehicular Trips (Proposed minus Existing)</b>			
<b>Peak Hour Period</b>	<b>Enter</b>	<b>Exit</b>	<b>Total</b>
<b>Weekday Morning School Arrival</b>	<b>16</b>	<b>10</b>	<b>26</b>
<b>Weekday Afternoon School Dismissal</b>	<b>8</b>	<b>14</b>	<b>22</b>

**Sources** Existing: Observed Site-Generated Traffic - May 2019  
Proposed: Based Upon Observed Trip Generation Rates for Expected Future Enrollment Provided By Darien Public Schools.



# CAPACITY ANALYSIS RESULTS

**TABLE 1**

Intersection Operation Summary - Vehicular Levels of Service / Average Delay (sec/veh)

		Weekday Morning Peak Hour				Weekday Afternoon Peak Hour			
Lane Use		2019 Existing	2022 Background	2022 Combined	2022 Optimized	2019 Existing	2022 Background	2022 Combined	2022 Optimized
<b>Traffic Signal - Mansfield Avenue at Ox Ridge School Driveway</b>									
<b>Overall</b>		<b>E / 73.0</b>	<b>E / 78.3</b>	<b>F / 90.5</b>	<b>C / 31.4</b>	<b>C / 23.3</b>	<b>C / 23.6</b>	<b>C / 24.1</b>	<b>B / 19.2</b>
Ox Ridge School Driveway	EB	C / 23.0	C / 23.0	C / 23.5	C / 33.0	C / 23.3	C / 23.4	C / 23.9	C / 28.2
Private Driveway	WB	B / 19.5	B / 19.5	B / 19.5	C / 23.5	B / 19.0	B / 19.0	B / 19.0	C / 21.5
Mansfield Avenue	NB	D / 53.3	E / 59.0	F / 90.1	B / 16.9	C / 23.0	C / 23.5	C / 24.1	B / 16.9
Mansfield Avenue	SB	F / 94.1	F / 100.1	F / 104.8	D / 39.5	C / 23.7	C / 23.9	C / 24.1	B / 18.4

**TABLE 2**

Intersection Operation Summary - Vehicular 50<sup>th</sup> / 95<sup>th</sup> Percentile Queue (In Feet)

		Weekday Morning Peak Hour				Weekday Afternoon Peak Hour			
Lane Use		2019 Existing	2022 Background	2022 Combined	2022 Optimized	2019 Existing	2022 Background	2022 Combined	2022 Optimized
<b>Traffic Signal - Mansfield Avenue at Ox Ridge School Driveway</b>									
Ox Ridge School Driveway	EB	60 / 89	61 / 89	67 / 97	67 / 102	64 / 114	65 / 116	72 / 126	72 / 130
Private Driveway	WB	3 / 11	3 / 11	3 / 11	3 / 11	1 / 5	1 / 5	1 / 5	1 / 6
Mansfield Avenue	NB	152 / 208	155 / 219	185 / 260	94 / 116	190 / 284	195 / 291	198 / 296	148 / 228
Mansfield Avenue	SB	513 / 553	527 / 565	537 / 574	333 / 377	164 / 252	167 / 257	170 / 260	137 / 216

## ROADWAY ACCESS & OPERATIONS CONCLUSIONS

- Driveway intersection operates with existing delays in the AM, particularly for SB traffic, acceptable operations in PM – Impacts last 15-20 minutes
- Analyzed Concurrent K-5 and Mansfield Ave Peak Periods
  - AM: 8:00 to 9:00 AM
  - PM: 3:00 to 4:00 PM
- Trip Generation Increase Based Upon K-5 Enrollment Growth (428 max enrollment versus 393 existing)
  - AM: 26 Additional Trips
  - PM: 22 Additional Trips
- Future traffic analysis show minor (PM) to moderate (AM) impacts to LOS and queues with the additional traffic
- Recommend signal timing optimization to improve operations from existing conditions